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10/606,974	06/26/2003	Dieter Klingel	DKT00071	6454

7590 06/23/2004

Attention: Patent Docket Administrator
BorgWarner Inc.
Powertrain Technical Center
3800 Automation Avenue, Suite 100
Auburn Hills, MI 48326-1782

EXAMINER

TRIEU, THAI BA

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,974	Applicant(s) KLINGEL, DIETER	
	Examiner Thai-Ba Trieu	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 28-53 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 28-53 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

The Preliminary Amendments filed June 26 and November 19, 2003 are acknowledged. Claims 2-27 were cancelled, and claims 28-53 were added.

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A (1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered (See Paragraphs [0005], [0007], [0009], [00011]).

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the **"closing bodies or the flow-through restrictor (35) being integrated in the housing of the turbocharger (10)"** (See Claim 43); and **"at least one first catalyst being located in line with and downstream of the turbocharger"** (See Claim 53) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if

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only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

1. IN THE ABSTRACT:

- Applicant is required to revised lines 13-14 of the abstract, since the sentence structure of ***"thereby the there from dependent pressure..."*** is deemed to be incorrect.

2. IN THE SPECIFICATION:

a. The disclosure is objected to because of the following informalities:

1. In Paragraph [00015], lines 19, 24 and 29, “**(patent claim 1)**”, “**(patent claim 18)**”, and “**(patent claim 24)**” should be deleted, since claim may be amended or cancelled during the prosecution of the instant application, and therefore, is not an appropriate characterization of the invention; and since claims 18 and 24 were cancelled by the preliminary amendments filed on June 26, and November 19, 2003.

2. In Paragraph [00027], line 10 should be corrected as -- “ air line 5, 25, [[no]] **neither** return valve [[or]] **nor** one way-valve need to be..”.

3. In Paragraph [00048], line 7, “**N_{ox}**” should be replaced by – **NO_x** – (for correcting typo error).

Appropriate correction is required.

b. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

- In Claim 1, line 12, “**one first** closing body” should be incorporated with the specification, since applicant discloses the element “30” as “variable closing device”, “closing device”, “control valve”, “valve”, “pipe switch”, “brake flap” etc... The term of “**one first**” before “closing body” has not been used in the specification in order that it can be different from the second or the third closing body/device.

- In Claim 37, line 4, and claim 38, line 2, “**second** closing body”; “**second** closing body” should be incorporated with the specification, since applicant discloses

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the element "34A, 34B" as "bypass valves". The term of "**second**" before "closing body" has not been used in the specification in order that it can be different from the first or the third closing body/device.

- In Claim 53, the recitation of "**at least one first catalyst being located in line with and downstream of the turbocharger**" should be incorporated with the specification.

Claim Objections

Claims 33 and 46 is objected to because of the following informalities:

- In claim 33, line 15, "**the charge air inlet (17)**" should be replaced by -- **the charge air inlet (7)** -- (for correcting typo error).
- In claim 46, line 1, "**wheien**" should be replaced by -- **wherein** -- (for correcting typo error).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims **1 and 28-53** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically,

1. Claim 1 recites the limitation "the outlet channels" in line 9. There is insufficient antecedent basis for this limitation in the claim.
2. In Claim 1, lines 18-19; claim 44, line 17; and Claim 50, line 19, the recitation of "**can be variably adjusted**" renders the claim indefinite, since it is

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not clear that under which condition the motor brake power is variably adjusted and under which condition the motor brake power is not variably adjusted. Accordingly, applicant should replace the recitation of ***"can be variably adjusted"*** by ***-- is variably adjusted --***, or clarify the condition of the motor brake power when it is variably adjusted, and when it is not variably adjusted.

3. In Claim 30, line 4, the recitation of ***"can be supplied"*** renders the claim indefinite, since it is not clear that under which condition a portion of the exhaust gas is supplied from the exhaust gas line and under which condition a portion of the exhaust gas is not supplied from the exhaust gas line.

4. In claim 41, the "recitation of ***"in particular"*** should be deleted, since this term renders the claim indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 29, 33, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Treuil (Patent Number 4,096,697).

Treuil discloses a motor brake device for a turbocharged internal combustion engine (1),

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with an at least two-stage charge system (7,8), which includes at least one high-pressure stage (7) as well as at least one low-pressure stage (8) connected in the exhaust gas flow downstream of the high-pressure stage (7) and upstream in the charge air flow,

with at least one exhaust gas line (5, 11, 14) connected with outlet channels (6) of the internal combustion engine (1) and connected downstream of the internal combustion engine (1),

with at least one first closing body (48), which provided in an area of the exhaust gas line downstream of the high-pressure stage (7) and/or the low-pressure stage wherein the first closing body (48) is constructed in such manner, that the exhaust gas flow-through and thereby the thereupon dependent pressure in the exhaust gas line (5,11, 14) is so variable, that thereby the motor brake power can be variably adjusted as required (See Figure 1, Column 2, lines 20-62, Column 8, lines 29-68, and Column 9, lines 1-22);

wherein the first closing body is a control valve (48), an exhaust gas brake flap or an exhaust gas throttle valve (See Figure 1);

wherein the turbocharger (7,8) includes the following elements:

- the high-pressure pressure turbine stage (7) includes one high-pressure turbine (7b) in the exhaust gas line (5, 11) and at least one high-pressure compressor (7a) in the charge air side, which are coupled to each other via an intermediate common shaft (Not shown) (See Figure 1);

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- the low-pressure stage (8) includes at least one low-pressure turbine (8b) in the exhaust gas line (5, 11) and at least one low-pressure compressor (8a) in the charge air side, which are coupled to each other via a second common shaft (Not shown) located between them(See Figure 1);

- at least one charge air cooler (17, 23) is provided , which is located in the charge air side (15, 19, 22) and the charge air inlet (3) of the internal combustion engine (1);

wherein at least one closing body (48) is a valve and/or restrictor and/or flap and/or slide valve (See Figure 1).

Claims 1, 28, 33-34, 39-42, 44 and 46-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Schmidt et al. (Patent Number 198 53 360 A1).

Regarding Claims 1, 28, 33-34, and 39-42 Schmidt discloses a motor brake device for a turbocharged internal combustion engine (1),

with an at least two-stage charge system (2,10), which includes at least one high-pressure stage (10) as well as at least one low-pressure stage (2) connected in the exhaust gas flow downstream of the high-pressure stage (10) and upstream in the charge air flow,

with at least one exhaust gas line (6, 19, 23) connected with outlet channels (Not Numbered) of the internal combustion engine (1) and connected downstream of the internal combustion engine (1),

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with at least one first closing body (16), which provided in an area of the exhaust gas line downstream of the high-pressure stage (10) and/or the low-pressure stage wherein the first closing body (16) is constructed in such manner, that the exhaust gas flow-through and thereby the thereupon dependent pressure in the exhaust gas line (6, 19, 23) is so variable, that thereby the motor brake power can be variably adjusted as required (See Figure 1, Column 1, lines 45-68, Column 2, lines 1-19, Column 3, lines 27-68, and Column 4, lines 1-33);

wherein the first closing body is a control valve (16) is controllable or adjustable (See Figure 1);

wherein the turbocharger (2,10) includes the following elements:

- the high-pressure pressure turbine stage (10) includes one high-pressure turbine (11) in the exhaust gas line (6) and at least one high-pressure compressor (12) in the charge air side, which are coupled to each other via an intermediate common shaft (13) (See Figure 1);

- the low-pressure stage (2) includes at least one low-pressure turbine (3) in the exhaust gas line (6) and at least one low-pressure compressor (4) in the charge air side, which are coupled to each other via a second common shaft (5) located between them(See Figure 1);

- at least one charge air cooler (8) is provided , which is located in the charge air side (7) and the charge air inlet (Not shown) of the internal combustion engine (1) (See Figure 1);

wherein at least one of the turbines (11, 3) is a turbine with variable geometry (9) (See Figure 1);

wherein at least one closing body (a rotary valve 16) is a valve and/or restrictor and/or flap and/or slide valve (See Figure 1);

wherein a control device (25) is provided, which provides a control or adjustment signal, via which the first closing body (16) and/or the second closing body and/or the flow through restrictor and/or the turbines (3) with variable turbine geometry (9) are adjustable or controllable (via 30, 31, 29) (See Figure 1);

wherein the control device (25) is a component of the motor control unit (ECU), which includes a program controlled unit, a microprocessor or microcontroller (See Figure 1); and

wherein the control or adjusting signal (30, 31, 29) is an electric or pneumatic or hydraulic signal (See Figure1).

Regarding claims 44 and 46-49, Schmidt discloses a process for operating a motor brake device for turbocharged internal combustion engine (1) with an at least two-stage charge system (2, 10), which includes at least one high-pressure stage (10) as well as at least one low-pressure stage (2) connected in the exhaust gas flow downstream of the high-pressure stage (10) and upstream in the charge air flow, with at least one exhaust gas line (6, 19, 23) connected with outlet channels (Not shown) of the internal combustion engine (1) and connected downstream of the internal combustion engine (1), and with at least one first closing body (16), which is provided in an area of

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the exhaust gas line downstream of the high-pressure stage (10) and/or the low-pressure stage (2), wherein the first closing body (16) is constructed in such a manner, that the exhaust gas flow-through and thereby the thereupon dependent pressure (via 26, 27, 28) in the exhaust gas line (6) is so variable, that thereby the motor brake power can be variably adjusted as required,

wherein said process comprises:

determining a brake mode, and

adjusting in the exhaust gas line (6) located ahead of the high-pressure turbine (10) a first pressure (via 26, 27, 28) via a control device (25) to a predetermined value depending upon the brake mode (See Figure 1, Abstract, *Note that the method/process as claimed would be inherent during the normal use and operation of the Schmidt device as disclosed*);

the first pressure (via 26) and/or the second pressure (P2S) being so adjusted that it is kept constant during the braking operation of the turbocharger (2, 10) (See Figure 1); and

the adjustment of the first pressure (via 26, 27, 28) and/or the second pressure (P2s) being achieved by influencing the flow-through cross-section of a exhaust gas line (6) located behind the low-pressure turbine (3), in that the closing body (16) is opened more or less strongly depending upon the desired flow through cross section (See Figure 1);

the adjustment of the first pressure (via 26, 27, 28) and/or the second pressure (P2S) being adjusted by influencing the flow through cross-section of a channel of at

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least one turbine (11,3), in that the turbine channel is more or less strongly opened depending upon the desired flow through cross-section (See Figure 1); and

the adjustment of the first pressure (P1) and/or the second pressure (P2S) is adjusted by influencing the flow through cross-section of at least additional closing bodies (24) in that the second closing body (24) is more or less strongly opened depending upon the desired flow through cross-section. (See Figure 1, Column 1, lines 45-68, Column 2, lines 1-19, Column 3, lines 27-68, and Column 4, lines 1-33).

Regarding claims 50-52, Schmidt discloses an internal combustion engine (1) comprising:

a motor block, which includes at least one cylinder (Not Shown) and which includes at least one charge air inlet (7) and at least one exhaust gas output (6), and as brake device, a charge air system (2, 10) with an at least two-stage charge system (2,10), which includes at least one high-pressure stage (10) as well as at least one low-

pressure stage (2) connected in the exhaust gas flow downstream of the high-pressure stage (10) and upstream in the charge air flow, with at least one exhaust gas line (6, 19, 23) connected with the outlet channels (Not shown) of the internal combustion engine (1) and connected downstream of the internal combustion engine (1), and with at least one first closing body (16), which is provided in an area of the exhaust gas line (6) downstream of the high-pressure stage (10) and/or the low-pressure stage (2), wherein the first closing body (16) is constructed in such a manner, that the exhaust gas flow-through and thereby the thereupon dependent pressure (via

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26, 27, 28) in the exhaust gas line (6) is so variable, that thereby the motor brake power is variably adjusted;

wherein the charge air system (2, 10) is the turbocharger (2, 10); and wherein the internal combustion engine (1) is a gasoline motor or a diesel motor (See Figure 1, Column 1, lines 45-68, Column 2, lines 1-19, Column 3, lines 27-68, and Column 4, lines 1-33).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Treuil (Patent Number 4,096,697) or Schmidt et al. (Patent Number DE 198 53 360 A1), in view of Pfluger (Patent Number DE 198 37 978 A1 or US 6,378,308 B1).

Treuil/Schmidt discloses the invention as recited above; however, Treuil/Schmidt fails to disclose a twin flow turbine, a bypass line, and a second closing body.

Pfluger teaches that it is conventional in the charged internal combustion engine art, to utilize an exhaust gas recirculation line (86) at least one turbine (23a, 23b, 31) of the turbocharger (20,30) being a twin flow turbine (23a, 23b), in which two turbine wheels are arranged parallel to each other (See Figure 1a, 3, 7); the two turbine wheels

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of the twin flow turbine (23a, 23b) having an exhaust gas channel with varying flow through cross-section; and each high-pressure turbine (23a, 23b) being provided in parallel arrangement with at least one bypass line (Not Numbered) with a respective therein associated second closing body (70, 71); and wherein the respective second closing bodies (70, 71) provided respectively in the bypass lines (Not Numbered) of the twin flow turbine (23a, 23b) are designed to be controllable or adjustable independently of each other (See Figure 1a, 3, and 7; Column 3, lines 15-65, and Column 4, lines 1-38 of DE 198 37 978 A1; or Column 3, lines 45-67, and Column 4, lines 1-51 of US 6,378,308 B1)

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized a twin flow turbine and a bypass line, as taught by Pfluger, since the use thereof would have improved the control of the exhaust gas flow in the charged internal combustion engine having the motor brake device.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Treuil (Patent Number 4,096,697) or Schmidt et al. (Patent Number DE 198 53 360 A1).

Treuil/Schmidt discloses the invention as recited above; however, Treuil/Schmidt fails to disclose at least one of the closing bodies or the flow through restrictor being integrated in the housing of the turbocharger.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to at least one of the closing bodies or the flow through restrictor being integrated in the housing of the turbocharger, since it has been held that

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constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al. (Patent Number DE 198 53 360 A1), in view of Sumser et al (Patent number DE 199 31 009 A1).

Schmidt discloses the invention as recited above; however, Schmidt fails to disclose the first pressure during braking operation being adjustable and greater than a second pressure in the charge air line located downstream of the high-pressure compressor.

Sumser teaches that it is conventional in the charged internal combustion engine art having an engine brake system, to utilize the first pressure during braking operation being adjustable and greater than a second pressure in the charge air line located downstream of the high-pressure compressor (See Abstract, Column 3, lines 38-68, and Column 4, lines 1-18).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the first pressure during braking operation being adjustable and greater than a second pressure in the charge air line located downstream of the high-pressure compressor, as taught by Sumser, since the use thereof would have increase the performance efficiency of the Schmidt charged internal combustion engine.

Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al. (Patent Number DE 198 53 360 A1), in view of Yanagihara (Patent number JP 04017714 A).

Schmidt discloses the invention as recited above; however, Schmidt fails to disclose at least one catalyst being provided and located in line and downstream of the turbocharger.

Yanagihara teaches that it is conventional in the charged internal combustion engine art, to utilize at least one catalyst (86) being provided and located in line and downstream of the turbocharger (17, 18) (See Figure 1).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized at least one catalyst being provided and located in line and downstream of the turbocharger, as taught by Yanagihara, to reduce the exhaust emissions of the Schmidt turbocharged internal combustion engine.

Allowable Subject Matter

Claim **30-32** would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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- Lange et al. (US Patent Number 5,884,482) disclose a combustion engine of a turbo-compound type with exhaust gas brake.

- Pfluger (US Patent Number 6,378,308 B1) discloses a turbocharged internal combustion engine.

- Yabe (Patent Number JP 01182533 A) discloses an exhaust-braking device of a supercharged internal combustion engine.

- Yabe (Patent Number JP 59082526 A) discloses a supercharged internal combustion engine.

- Moeller (Patent Number EP 864 737 A1) discloses a turbocharged internal combustion engine having a rotary valve structure in a housing to switch between the turbochargers in series.

- Bischoff (Patent Number DE 198 53 127 A1) discloses an engine braking for a charged internal combustion engine.

- Schittler (Patent Number DE 40 24 572 A1) discloses a turbocharged internal combustion having two exhaust turbo-superchargers either of which is closed independently by controller of compressor output and air flow regulator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703) 308-6450. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (703) 308-2623. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
June 17, 2004



Thai-Ba Trieu
Patent Examiner
Art Unit 3748